



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
10/771,714	02/04/2004	Mark J. Cleaver	0232W/00028-U	4133	
24350	7590	11/10/2005	EXAMINER		
STITES & HARBISON, PLLC 400 W MARKET ST SUITE 1800 LOUISVILLE, KY 40202-3352		SAWHNEY, HARGOBIND S			
		ART UNIT		PAPER NUMBER	
		2875			

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/771,714	CLEAVER ET AL. <i>[Signature]</i>
	Examiner	Art Unit
	Hargobind S. Sawhney	2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 29 August 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3,4 and 7-29 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4 and 7-29 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

1. The amendment filed on August 29, 2005 has been entered. Accordingly:

- Claims 1, 4 and 19 have been amended;
- Claims 2, 5 and 6 have been canceled; and
- New claims 25-29 have been added.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 25 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Wynn Willson (US Patent No.: 6,676,284 B1).

Regarding claims 25 and 27, Wynn Willson ('284 B1) discloses an illumination device comprising:

- a substantially rod-like member 17 including a light receiving surface – inner surface the rod-like member 17-, and light-emitting surface – outer surface of the rod-like member 17 (Figure 9, column 13, lines 8-10);
- the rod-like member 17 composed of a substantially flexible material (Figure 9, claim 6);

- a flexible circuit board 14 received in the internal channel defined by the rod-like member wall (Figure 9, column 2, lines 28-30; column 9, lines 17-24; and claims 6 and 34);
- a plurality of spaced light sources 15 arranged on the flexible circuit board 14, and the point light sources 15 arranged along the light receiving surface of the rod-like member 17 (Figure 9, column 12, column 12, lines 60-64);
- the light, incident on the light receiving surface of the rod like member 17, appearing uniform along the light emitting surface (Figure 1, column 13, lines 7-16; and claim 1).
- a collection surface 16, positioned near the point light sources 15, capable of reflecting light not emitted directly into the rod-like member 17 (Figure 9, column 13, lines 1-7); and
- the point light sources 15 being light emitting diodes (LEDs) (Figure 9, column 12, lines 60-64).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Art Unit: 2875

5. Claims 1-4, 7-10, 13-15 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeichi (English translated Japanese Patent Application Pub. No.: JP 61165583), hereinafter referred as Takeichi, in view of Zamja et al. (US Patent No.: 4,195,907).

Note: The information disclosure statement (IDS) filed on June 3, 2005 includes the English translated Japanese Patent Application Pub. No.: JP 61165583).

Regarding Claim 1, Takeichi discloses an illumination device comprising:

- a substantially rod-like member 3 (Figure 1, Takeichi, page 3, line 22) having a predetermined length with a light receiving surface – the surface adjacent to the light-emitting surface of the light-emitting element 1 (Figure 1, Takeichi, page 3, line 22);
- the rod-like member 3 composed of substantially flexible compound impregnated with filler deflecting light and producing uniform light intensity pattern (Figure 1, Takeichi, page 3, line 22; and page 5, lines 5 and 6);
- an elongated and substantially flexible light source 1 – a plurality of light emitting elements connected with a flexible conductive wire 2 – positioned adjacent to the light receiving surface (Figure 1, Takeichi, page 3, line 21); and
- the light, emitted from the light-source 1, entering the rod-like member 3 through the light-receiving surface, being scattered (Figure 1, Takeichi, page 5, lines 6 and 7).

Art Unit: 2875

However, Takeichi does not specifically teach the rod-like member including the filler including micro balloons each having a shell, and deflecting light incident thereon..

On the other hand, Zamja et al. ('907) discloses a light-conducting rod-like member 94 formed of a flexible material having micro balloons 92 each having a shell – the boundary defined by the filler, which is surrounding each shell - (Figures 3 and 5, column 3, lines 22-28).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the device of Takeichi by providing the rod-like member composed of a flexible material with impregnated micro balloons as taught by Zamja et al. ('907) for benefit and advantage of providing lateral reflection of light for decorative effects.

Regarding claims 3, 4, 7-10 and 13-15, Takeichi in view of Zamja et al. ('907) discloses the illumination device further comprising:

- the flexible compound made of silicone rubber (Takeichi, Figure 1, page 4, line 23);
- a housing 33 enclosing the light source 1; the housing positioned below and extending along the rod-like member 3 (Takeichi, Figure 1, page 5, line 6);
- the housing 33 including a pair of side walls – the upper portions of the walls of the left and right halves of the housing 33 (Takeichi, Figure 1, page 5, line 6) - defining an open-ended channel extending substantially the predetermined length of the rod-like member 3 (Takeichi, Figure 1);

- the housing 33 further including a floor portion - the lower portion common to the side walls of the left and right halves of the housing 33 (Takeichi, Figure 1, page 5, line 6)- defining substantially U-shape of the housing 33 (Takeichi, Figure 1 and 2);
- the housing 33 further including internal surface 32 with a light –reflective material (Takeichi, Figures 1 and 2, page 4, lines 25-27);
- the light source 1 including a multiplicity of spaced point- light sources extending along the light-receiving surface of the rod-like member 3 (Takeichi, Figure 1, page 3, lines 23-27);
- the multiplicity of point-light sources being LEDs (Takeichi, Figure 1, page 4, lines 2 and 3); and
- the rod-like member 3 defining an internal channel – the longitudinal space housing the multiplicity of spaced LEDs (Takeichi, Figure 1).

Regarding claims 19-24, Takeichi in view of Zamja et al. ('907) discloses the illumination device comprising the apparatus elements in similar manner as that applied to claims 1-4, 7-10, 13-15 and 19-24 detailed above. In addition, Takeichi in view of Zamja et al. ('907) teaches the illumination device further comprising:

- the housing 33 including a pair of side walls – the upper portions of the walls of the left and right halves of the housing 33 (Figure 1, page 5, line 6) – defining a volume adjacent the light receiving surface (Figure 1);
- the housing 33 receiving elongated light source including a plurality of LEDs linearly spaced from one another (Takeichi, Figure 1); and

Art Unit: 2875

- the housing 33 further including internal surface 32 with a light -reflective material (Figures 1 and 2, Takeichi, page 4, lines 25-27).

The combined teaching Takeichi in view of Zamja et al. ('907) applied for the illumination device meets the method limitations of claims 19-24.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to meet the method limitations of claims 19-24 by applying the combined teaching of Takeichi in view of Zamja et al. ('907) detailed above.

6. Claims 11, 12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeichi (English translated Japanese Patent Application Pub. No.: JP 61165583), hereinafter referred as Takeichi, in view of Luk (US Patent No.: 6,846,094 B2).

Regarding claims 11 and 16, dependent on claims 8 and 15 respectively, Takeichi discloses an illumination device comprising a rod-like member optically coupled with spaced plurality of LEDs electrically connected with one another.

However, Takeichi does not specifically teach the illumination device including a flexible circuit board bearing the plurality of LEDs.

On the other hand, Luk ('094 B2) discloses a flexible LED lighting device 10 (Figure 1) including a flexible circuit board 24 bearing a plurality of LEDs 36 spaced from one another (Figure 1, column 5, Lines 23, 28 and 36-38).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the rod-like member of Takeichi by providing flexible circuit

board bearing a plurality of LEDs as taught by Luk ('094 B2) for benefit and advantage of reduction in manufacturing cost, and easy forming of the device to a desired shape.

Regarding each of claims 12 and 17, dependent on claims 11 and 16 respectively, Takeichi in view Luk ('094 B2) of discloses an illumination device comprising a rod-like member optically coupled with spaced plurality of LEDs electrically connected with one another. Additionally, Takeichi in view Luk ('094 B2) teaches securing the plurality of LEDs mounted on a flexible circuit board with filling of the light-transmitting casting material of the flexible bar-like casting (Figure 1, Takeichi, page 3, line 22).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeichi (English translated Japanese Patent Application Pub. No.: JP 61165583), hereinafter referred as Takeichi, in view of Ghandehari (US Patent No.: 5,537,297).

Takeichi discloses an illumination device comprising a rod-like member optically coupled with spaced plurality of LEDs electrically connected with one another.

However, Takeichi does not specifically teach the illuminating device including a rod-like member further including a collection surface adjacent a portion of the outer surface of the rod-like member, and the collection surface positioned near the light source.

On the other hand, Ghandehari ('297) discloses a reflecting lighting device including a rod-like member 12 including a collection surface 50 positioned near a light source 15 (Figures 1-3, column 3, lines 17-21 and 55- 55-59).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the rod-like member of Takeichi by with a collection surface as taught by Ghandehari ('297) for benefit and advantages of controlling the direction of the light reflected through the rod-like member.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn Willson (US Patent No.: 6,676,284 B1) in view of Sugiyama et al. (US Patent No.: 5,982,969).

Wynn Willson ('284 B1) discloses an illumination device comprising a light collection surface positioned on the inner surface of the rod-like member, and near the point light sources.

However, Wynn Willson ('284 B1) does not specifically teach the light collection surface positioned adjacent a portion of the outer surface of the rod-like member as claimed by the applicant.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to realize the optical equivalency of positioning the collection (reflective) surface on the outer surface of the rod-like member, instead of placing the reflective surface on the inner surface of the rod-like member as evident in Sugiyama et al. ('969) (Figures 3 and 7, column 6, lines 38-44; and column 8, lines 38-40).

Additionally, the above-indicated modification imparts benefit and advantages of controlling the direction of the light reflected through the rod-like member.

Art Unit: 2875

9. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn Willson (US Patent No.: 6,676,284 B1) in view of Zamja et al. (US Patent No.: 4,195,907).

Regarding claim 28, Wynn Willson ('284 B1) discloses an illumination device comprising a rod-like member composed of flexible compound defining a cavity receiving a flexible circuit board bearing a plurality of spaced point light sources.

However, Wynn Willson ('284 B1) does not specifically teach the flexible compound impregnated with a filler deflecting light incident thereon.

On the other hand, Zamja et al. ('907) discloses a light-conducting rod-like member 94 formed of a flexible material having micro air- balloons 92 (Figures 3 and 5, column 3, lines 22-28).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to further modify the device of Wynn Willson ('284 B1) by providing the rod-like member composed of a flexible material with impregnated micro air-balloons as taught by Zamja et al. ('907) for benefit and advantage of providing lateral reflection of light for decorative effects.

Regarding Claim 29, Wynn Willson ('284 B1) in view of Zamja et al. ('907) discloses the rod-like member composed of flexible compound further comprising the filler material being micro balloons (Zamja, Figures 3 and 5, column 3, lines 22-28).

***Response to Amendment***

10. Applicant's arguments filed on August 29, 2005 with respect to the 35 U.S.C. 102(b) rejection of claim 1; and 35 U.S.C. 103(a) rejection of claims 5 and 19 have been fully considered but they are not persuasive.

Argument: Regarding the amended claim 1, the limitation "filler compound comprising a plurality of micro balloons" as taught by Takeichi in view of Zamja et al. ('907) does not meet the objective of " collecting light pattern on the light-emitting surface of a waveguide (rod-like member - of the invention- Zamja et al. ('907) teaches optical inhomogeneities for creation of "decorative points of light.

Therefore, there appears to be no suggestion or motivation for combining the Takeichi and Zamja et al. ('907).

Response: The applicant has claimed the flexible compound composed of a filler material with micro balloons in amended claim 1. This clearly indicates that the invention allows local reflective spots combined with nearly uniform light intensity along the length of the wave guide. Therefore, the objective of the invention is met with the combined teaching of Takeichi and Zamja et al. ('907).

Argument: The prior art references (or references when combined) must teach or suggest all of the claimed limitations. Regarding

Claim 1, Takeichi in view of Zamja et al. ('907) does meet the limitation "filler compound comprising a plurality of micro balloons" included in the amended Claim 1.

Response: As detailed in section 5 of this office action, Takeichi in view of Zamja et al. ('907) discloses the illumination device comprising a filler compound comprising a plurality of micro balloons.

Argument: Takeichi teaches an illumination device without a flexible circuit board. There is no motivation to replace to replace the conductive wires with a flexible board as taught by Luk ('094 B2). Further, Luk ('094 B2) teaches a flexible board of the helical construction. Implementation of Luk's teaching of using an helical shaped flexible circuit board would substantially decrease brightness and non-uniform light intensity pattern along the light -emitting surface.

Response: Along with beneficial use of a flexible circuit board, Luk ('094 B2) expresses motivation " capable of being configured into numerous configurations and maintain the selected configuration. Additionally, Luk ('094 B2) indicated cost effective method of manufacture (Luk, Column 3, lines 13-19).

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

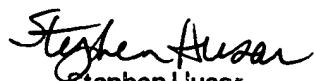
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S. Sawhney whose telephone number is 571 272 2380. The examiner can normally be reached on 6:15 - 2:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 571 272 2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HSS  
7/6/05

  
Stephen Husar  
Primary Examiner